

JS BUILDING BLOCKS

Values & Variables



GOALS





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- Work with primitive types
- Understand let & const
- Use String Template Literals
- Work with common operators/methods



PRIMITIVE TYPES

- Number
- String
- Boolean
- Null
- Undefined

* Technically there are two others: Symbol and BigInt



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RUNNING CODE IN THE CONSOLE

We'll start by using the chrome console to quickly run code without any setup. (just for this section)

NUMBERS IN JS



50

7

3.874

0.99

-45

-777.23444

- JavaScript has ONE Number type
- Positive numbers!
- Negative numbers!
- Whole number (integers)!
- Decimal numbers!

SIMPLE OPERATIONS



```
//Addition
```

```
50 + 5 //55
```

```
//Subtraction
```

```
90 - 1 //89
```

```
//Multiplication
```

```
11111 * 7 //77777
```

```
//Division
```

```
400 / 25 //16
```

```
//Modulo!!
```

```
27 % 2 //1
```

We have all the basic
math operations you
would expect...

// creates a comment,
which JS will ignore



NaN

NOT A NUMBER

NaN is a numeric value that represents
something that is not...a number

NaN



0/0 //NaN

1 + NaN //NaN



QUIZ



WHAT DOES THIS
EVALUATE TO??



1.5 + 1.5 * 2

WHAT DOES THIS
EVALUATE TO??



```
( 10 % 6 ) ** 2
```

WHAT DOES THIS
EVALUATE TO??



200 + 0/0

VARIABLES

Variables are like "labeled jars" for a value in JavaScript.

We can store a value and give it a name, so that we can...

- recall it
- use it
- or change it later on.



BASIC SYNTAX

```
let someName = value;
```

BASIC SYNTAX

```
let age = 55;
```

Make me a variable called "age" and give it the value of 55



RECALL VARIABLES



```
let hens = 4;
```

```
let roosters = 2;
```

```
hens + roosters //6
```

UPDATE VALUES



```
let hens = 4;
```

```
//A raccoon killed a hen :(  
hens - 1; //3
```

This does not change the
value stored in hens

```
hens; //Still 4!
```

```
//To actually change hens:  
hens = hens - 1;  
hens //3
```

This does!

CONST

```
const hens = 4;  
hens = 20; //ERROR!
```

```
const age = 17;  
age = age + 1; //ERROR!
```

`const` works just like
`let`, except you CANNOT
change the value

NOT ALLOWED!
YOU'RE IN TROUBLE!!
I'M TELLING MOM!!!

WHY USE CONST?



```
const pi = 3.14159;  
  
const daysInWeek = 7;  
  
const minHeightForRide = 60;
```

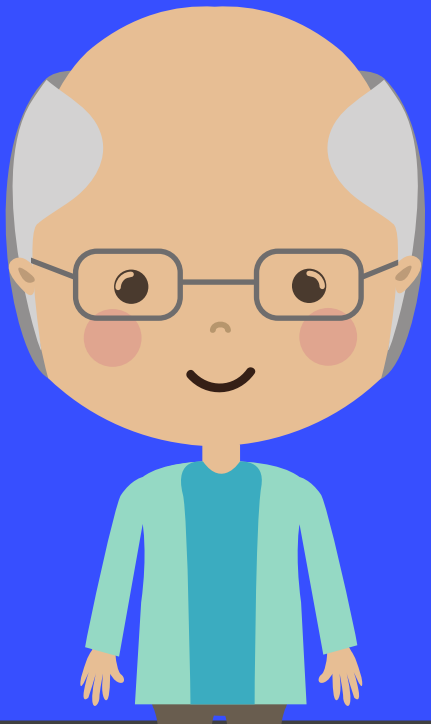
Once we cover Arrays & Objects, we'll see other situations where *const* makes sense over *let*.

VAR



```
var tripDistance = 7.4;
```

Before *let* & *const*, *var* was the only way of declaring variables. These days, there isn't really a reason to use it.





QUIZ



What is the value of *eggCount* ?



```
let eggCount = 42;  
eggCount + 2;
```

What is the value
of *rating* after this
code runs?



```
const rating = 7.5;  
rating = 8;
```

What's the value of *wind_speed* ?



```
let wind_speed = 76;  
wind_speed += 5;  
wind_speed--;
```

What's the minor issue with this code?



BOOLEANS



TRUE

or



FALSE

BOOLEANS

```
let isLoggedIn = true;  
  
let gameOver = false;  
  
const isWaterWet = true;
```

Booleans are simple True or False values
Yes or No. 1 or 0.

VARIABLES CAN CHANGE TYPE

```
let numDonuts = 12; //it's a Number  
  
numDonuts = false; //now it's a Boolean!  
  
numDonuts = 129873872; //back to Number :)
```

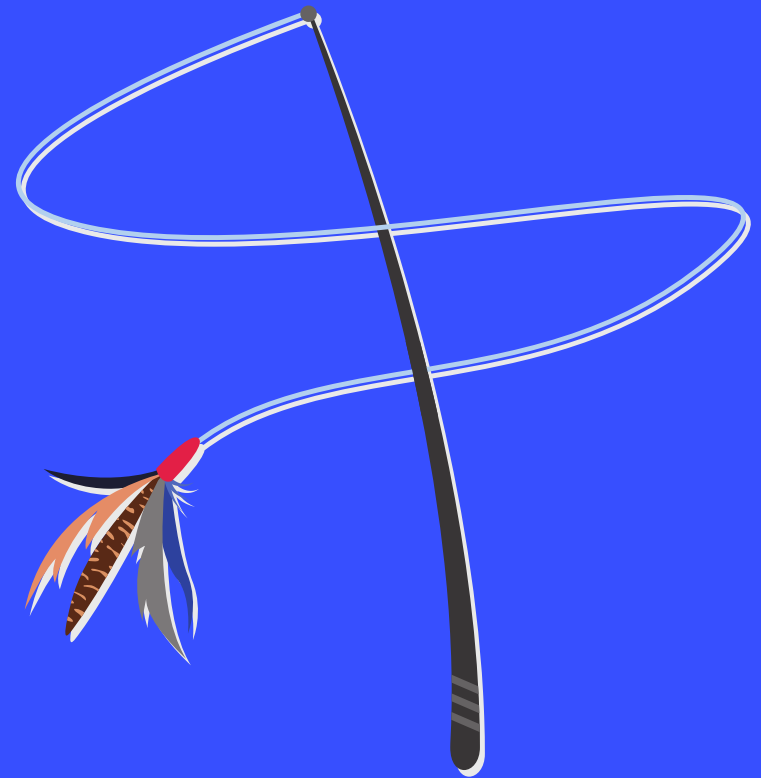
You probably wouldn't change a number to a boolean, but you can!



STRINGS

In JavaScript,
Strings are pieces of text,
or *strings* of characters.

We wrap them in quotes



STRINGS

```
let firstName = "Ziggy";      Double quotes work  
let msg = "Please do not feed the chimps!";  
let animal = 'Dumbo Octopus'; So do single quotes  
let bad = "this is wrong";   This DOES NOT work
```

Whether you use single or double quotes,
just make sure you are consistent.



STRINGS ARE INDEXED

C	H	I	C	K	E	N
0	1	2	3	4	5	6

Each character has a corresponding index
(a positional number)



STRINGS ARE INDEXED



```
let firstName = 'Ziggy';

//Strings have a length property:
firstName.length //5

//Access individual characters using index:
firstName[0] // "Z"
firstName[3] // "g"

//Even though length is 5...
firstName[5] //DOES NOT WORK!
```



STRING METHODS

Strings come with a set of built-in methods, which are **actions** that can be performed on or with that particular string.

We can do things like...

- Searching within a string
- Replacing parts of a string
- Changing case (upper/lowercase)



thing.method()

Changing Case

```
let msg = 'I am king';  
let yellMsg = msg.toUpperCase(); // 'I AM KING'  
  
let angry = 'LeAvE mE aLoNe!';  
angry.toLowerCase(); // 'leave me alone!'  
  
//the value in angry is unchanged  
angry; // 'LeAvE mE aLoNe!'
```



trim



```
let greeting = '  leave me alone plz  ';  
greeting.trim() // 'leave me alone plz'
```



thing.method(arg)

Some methods accept **arguments** that modify their behavior.

We pass these arguments inside of the parentheses.



indexOf



```
let tvShow = 'catdog';  
  
tvShow.indexOf('cat'); // 0  
tvShow.indexOf('dog'); // 3  
tvShow.indexOf('z'); // -1 (not found)
```



slice



```
let str = 'supercalifragilisticexpialidocious'  
  
str.slice(0,5); //'super'  
  
str.slice(5); // 'califragilisticexpialidocious'
```



replace

```
let annoyingLaugh = 'teehee so funny! teehee!';  
annoyingLaugh.replace('teehee', 'haha') // 'haha so funny! teehee!'  
//Notice that it only replaces the first instance
```



QUIZ





WHAT IS THE VALUE OF *AGE*?



```
const age = "5" + "4";
```

WHAT DOES THIS EVALUATE TO?



```
"pecan pie"[7]
```

WHAT DOES THIS
EVALUATE TO?



```
"PUP"[3];
```



What is the value of *song*?



```
let song = "london calling";  
song.toUpperCase();
```

What is the value of *cleanedInput*?

```
let userInput = "  TODD@gmail.com";  
let cleanedInput = userInput.trim().toLowerCase();
```

What is the value of *index*?

```
let park = 'Yellowstone';  
const index = park.indexOf('Stone');
```

What is the value of *index*?



```
let yell = 'GO AWAY!!';  
let index = yell.indexOf('!');
```

WHAT DOES THIS EVALUATE TO?

```
'GARBAGE!'.slice(2).replace("B", '');
```



STRING ESCAPES

- `\n` – newline
- `\'` – single quote
- `\"` – double quote
- `\\` – backslash

STRING TEMPLATE LITERALS

Template literals are strings that allow embedded expressions, which will be evaluated and then turned into a resulting string.

```
`I counted ${3 + 4} sheep`; // "I counted 7 sheep"
```



WE USE BACK-TICKS
NOT SINGLE QUOTES

``I am a template literal``

* The back-tick key is usually above the tab key



TEMPLATE LITERALS



```
let username = 'Ziggy31';  
`Welcome back, ${username}` // "Welcome back, Ziggy31"  
  
`GAME OVER ${username.toUpperCase()}` // "GAME OVER ZIGGY31"
```



TEMPLATE LITERALS



```
let item = 'cucumbers';  
let price = 1.99;  
let quantity = 4;
```

```
`You bought ${quantity} ${item}, total price: ${price*quantity}`;  
// "You bought 4 cucumbers, total price: $7.96"
```



NULL & UNDEFINED

- Null
 - "Intentional absence of any value"
 - Must be assigned
- Undefined
 - Variables that do not have an assigned value are undefined

NULL

```
1 // No one is logged in yet...
2 let loggedInUser = null; //value is explicitly nothing
3
4 // A user logs in...
5 loggedInUser = 'Alan Rickman';
```



UNDEFINED



```
1 let pickles; //We didn't assign a value
2 pickles; //undefined,
3 pickles = 'are very gross'
4
5 //Undefined also comes up in other situations:
6 let food = 'tacos';
7 food[7]; //undefined
```